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MOAB UTAH

UMTRA Project

# August 2005 Water Sampling Validation Data Package for Configuration 1 Interim Action Well Field Monthly Sampling Moab, Utah

November 2005

U.S. Department of Energy

Office of Environmental Management

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*for the U.S. Department of Energy Office of Environmental Management.*
*Approved for public release; distribution is unlimited.*

**August 2005 Water Sampling**

# Validation Data Package
# for
# Configuration 1 Interim Action Well Field Monthly Sampling
# Moab, Utah

November 2005

# Moab, Utah

August 23-26, 2005

## Data Package Contents

This data package includes the following information:

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# Sampling Event Summary

**Site:** Moab, Utah

**Sampling Period:** August 23-26, 2005

The purpose of this sampling was to collect data that can be used to evaluate the performance of Configuration 1 of the interim action well field. The extraction wells had been operating the 2005 pumping season since mid-February 2005. This is the seventh monthly performance sampling round conducted in 2005 for Configuration 1.

According to the USGS Cisco Gaging Station, the mean daily Colorado River flows during the time period of this sampling event were between 3,440 and 3,570 cubic feet per second. These flow rates are approximately 60 percent lower than during the previous month's sampling event.

Sampling and analysis was conducted in accordance with the *Operations, Maintenance, and Performance Monitoring Plan for the Interim Action Ground Water Treatment System, February 2004.* Ground water samples were collected from 11 extraction wells (0470-0479 and SMI-PW02), six observation wells (0403, 0407, 0483, 0557, 0559, and 0560), four piezometers (0562 through 0565), two surface water locations (0216 and 245), and two treatment system locations (0547 and 0548). Including two duplicates and one equipment blank, a total of 28 samples were collected.

Anomalous low concentrations of ammonia, chloride, sulfate, and TDS were detected in samples from an extraction well (0470), several observation wells, and piezometers (0563 and 0564). Ammonia concentrations were less than or nearly one-half of their historical minimum for two (0470 and 0565) of these locations. This continued decrease in constituent concentrations will be evaluated throughout the upcoming fiscal year.

Pumping rates for extraction wells 0470 through 0479 range from less than 1 to 3.4 gallons per minute (gpm). Well No. SMI-PW02 has a pumping rate of 22 gpm. These rates are in the average range for the Configuration 1 well field, but are slightly less than reported for the previous 3 months.

A detailed discussion of extraction well field performance is presented in the *Fall 2004 Performance Assessment of the Ground Water Interim Action Well Fields at the Moab, Utah, Project Site, January 2005.* However, time versus concentration graphs for selected key performance indicator wells and major contaminants of concern are included. Data presented in these graphs indicate that contaminant concentrations are at expected levels.

The data validation indicated the data meet the quality control criteria specified for this project. No significant discrepancies were noted regarding sample shipping/receiving, preservation and holding times, lab instrument calibration, method blanks, matrix spikes, etc., except as qualified.

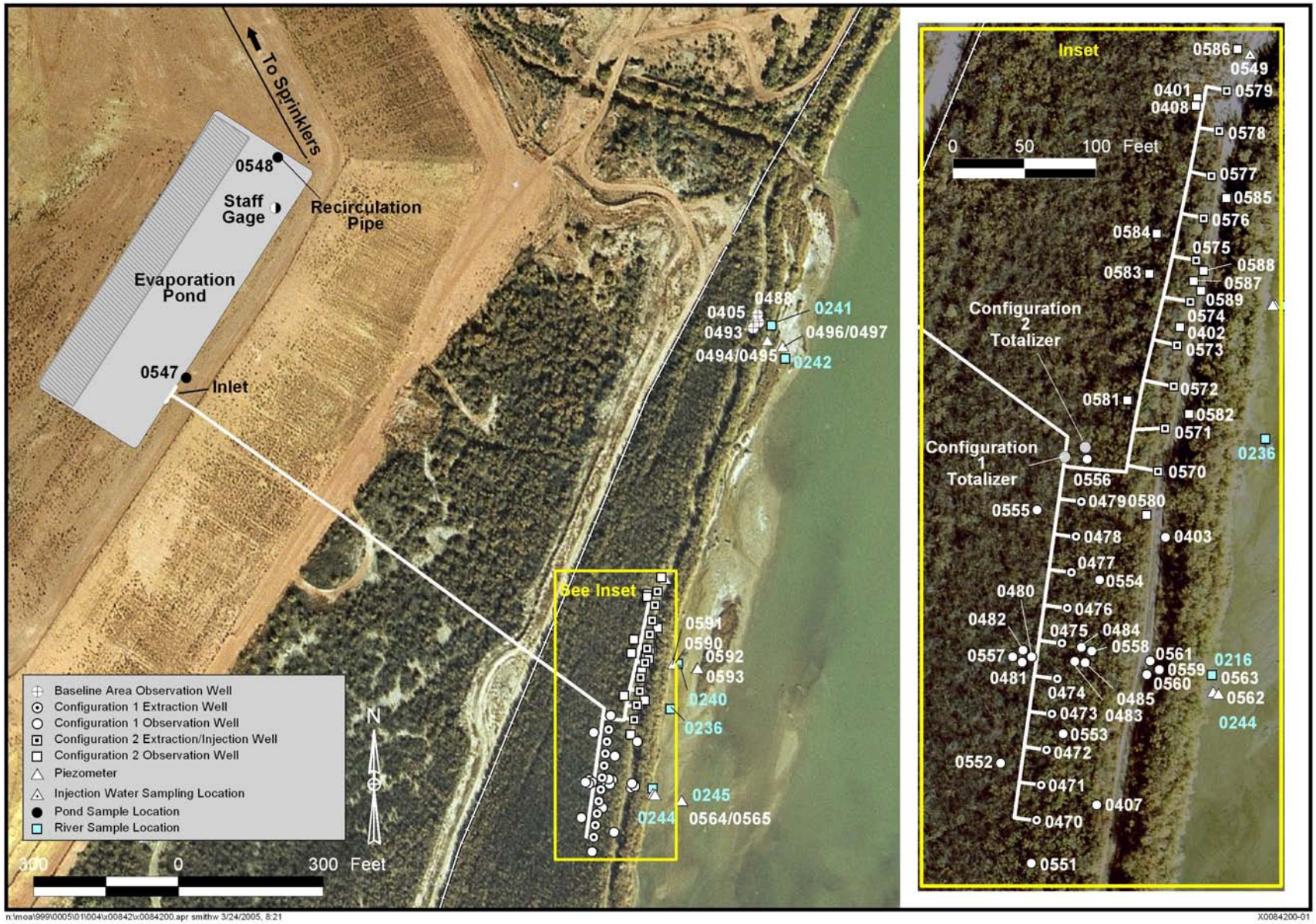
John R. Ford

John R. Ford
Ground Water Lead

11/23/05

Date

# Sample Location Map




*Sample Locations at the Interim Action Well Field and Baseline Area (may include locations not sampled)*

# Data Assessment Summary

# Water Sampling Field Activities Verification Checklist

| | | | |
|---|---|---|---|
| **Project** | Moab, Utah | **Date(s) of Water Sampling** | August 23-26, 2005 |
| **Date(s) of Verification** | November 7, 2005 | **Name of Verifier** | Jeff Price |

| | Response (Yes, No, NA) | Comments |
|---|---|---|
| 1. Is the SAP the primary document directing field procedures? | Yes | |
| List other documents, SOP's, instructions. | NA | |
| 2. Were the sampling locations specified in the planning documents sampled? | Yes | |
| 3. Was a pre-trip calibration conducted as specified in the above named documents? | Yes | |
| 4. Was an operational check of the field equipment conducted twice daily? | Yes | |
| Did the operational checks meet criteria? | Yes | |
| 5. Were the number and types (alkalinity, temperature, Ec, pH, turbidity, DO, ORP) of field measurements taken as specified? | Yes | |
| 6. Was the Category of the well documented? | Yes | |
| 7. Were the following conditions met when purging a Category I well: | | |
| Was one pump/tubing volume purged prior to sampling? | Yes | |
| Did the water level stabilize prior to sampling? | Yes | |
| Did pH, specific conductance, and turbidity measurements stabilize prior to sampling? | Yes | |
| Was the flow rate less than 500 mL/min? | Yes | |
| If a portable pump was used, was there a 4 hour delay between pump installation and sampling? | NA | |

# Water Sampling Field Activities Verification Checklist (continued)

| | Response (Yes, No, NA) | Comments |
|---|---|---|
| 8. Were the following conditions met when purging a Category II well: | | |
| Was the flow rate less than 500 mL/min? | Yes | |
| Was one pump/tubing volume removed prior to sampling? | Yes | |
| 9. Were duplicates taken at a frequency of one per 20 samples? | Yes | |
| 10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment? | Yes | |
| 11. Were trip blanks prepared and included with each shipment of VOC samples? | NA | |
| 12. Were QC samples assigned a fictitious site identification number? | Yes | |
| Was the true identity of the samples recorded on the Quality Assurance Sample Log? | Yes | |
| 13. Were samples collected in the containers specified? | Yes | |
| 14. Were samples filtered and preserved as specified? | Yes | |
| 15. Were the number and types of samples collected as specified? | Yes | |
| 16. Were chain of custody records completed and was sample custody maintained? | Yes | |
| 17. Are field data sheets signed and dated by both team members? | Yes | |
| 18. Was all other pertinent information documented on the field data sheets? | Yes | |
| 19. Was the presence or absence of ice in the cooler documented at every sample location? | Yes | |
| 20. Were water levels measured at the locations specified in the planning documents? | Yes | |

## Laboratory Performance Assessment

General Information

| | |
|---|---|
| Requisition No. (RIN): | 05080221 |
| Sample Event: | August 24-25, 2005 |
| Site(s): | Moab, Utah |
| Laboratory: | Paragon Analytics |
| Work Order No.: | 0508267 |
| Analysis: | Metals and Inorganics |
| Validator: | Steve Donivan |
| Review Date: | October 18, 2005 |

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), "Standard Practice for Validation of Laboratory Data", GT-9(P). All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 1.

*Table 1. Analytes and Methods*

| Analyte | Line Item Code | Prep Method | Analytical Method |
|---|---|---|---|
| Uranium, U | GJO-01 | SW-846 3005A | SW-846 6020A |
| Chloride, Cl | MIS-A-039 | SW-846 9056 | SW-846 9056 |
| Sulfate, SO4 | MIS-A-044 | SW-846 9056 | SW-846 9056 |
| Ammonia as N, $NH_3$-N | WCH-A-005 | MCAWW 350.1 | MCAWW 350.1 |
| Total Dissolved Solids, TDS | WCH-A-033 | MCAWW 160.1 | MCAWW 160.1 |

Data Qualifier Summary

Analytical results were qualified as listed in Table 2. The uranium result for sample 0508267-26 is qualified as "U" because the associated calibration blank result is greater than the method detection limit (MDL) and the sample result is less than 5 times the calibration blank result.

*Table 2. Data Qualifiers*

| Sample Number | Location | Analyte | Flag | Reason |
|---|---|---|---|---|
| 0508267-26 | 2980 (Equip Blank) | U | U | Less than 5 times the calibration blank |

Sample Shipping/Receiving

Paragon Analytics in Fort Collins, Colorado, received 28 samples on August 27, 2005, accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all of the samples were listed on the form with sample collection dates and times, and that signatures

and dates were present indicating sample relinquishment and receipt. The sample submittal documents including the COC form and the sample tickets had no errors or omissions.

Preservation and Holding Times

The sample shipment was received cool and intact with the temperature within the coolers of 3.6 and 3.0°C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses and all samples were analyzed within the applicable holding times.

Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear curve. Compliance requirements for continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods.

*Method SW-846 6020*

Calibration for uranium was performed on September 15, 2005. The initial calibration was performed using six calibration standards resulting in a calibration curve with a correlation coefficient ($r^2$) value greater than 0.995. The absolute value of the curve intercept was less than 3 times the MDL. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification (CCV) checks were made at the required frequency resulting in six CCVs. All calibration check results met the acceptance criteria. A reporting limit verification check was made at the required frequency to verify the linearity of the calibration curve near the practical quantitation limit. The check was within the acceptance criteria range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries were stable and within acceptable ranges.

*Method SW-846 9056*

The initial calibrations for chloride and sulfate were performed using five calibration standards each on August 15, 2005. The calibration curve $r^2$ values were greater than 0.995 and intercepts were less than 3 times the MDL. Initial calibration and calibration check standards were prepared from independent sources. Initial and continuing calibration checks were made at the required frequency resulting in nine CCVs. The calibration checks met the acceptance criteria.

*Method MCAWW 350.1*

The initial calibration for ammonia as N was performed using six calibration standards on September 8, 2005, resulting in a calibration curve with a $r^2$ value greater than 0.995 and an intercept less than 3 times the MDL. Initial and continuing calibration checks were made at the required frequency resulting in eight CCVs. All calibration check results met the acceptance criteria.

*Method MCAWW 160.1*

There are no calibration requirements associated with the determination of total dissolved solids (TDS).

Method and Calibration Blanks

The uranium initial and continuing calibration blanks were below the practical quantitation limits but greater than the MDL. The uranium result for sample 0508267-26 was less than 5 times the concentration of the associated calibration blank and is qualified as "U". The chloride, sulfate, ammonia as N, and TDS method blanks and calibration blanks were below the MDLs.

Inductively Coupled Plasma Interference Check Sample Analysis

Inductively coupled plasma interference check samples were analyzed at the required frequency to verify the instrumental interelement and background correction factors. All check sample results met the acceptance criteria.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate pairs were analyzed for uranium, chloride, sulfate, and ammonia as N as a measure of method performance in the sample matrix. The spike recoveries met the recovery and precision criteria for all analytes.

Laboratory Replicate Analysis

The relative percent difference (RPD) values for the laboratory replicate sample and matrix spike duplicate sample results for all analytes were less than 20 percent, indicating acceptable laboratory precision.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. The results were acceptable for all analytes.

Metals Serial Dilution

Serial dilutions were performed during the uranium analysis to monitor physical or chemical interferences that may exist in the sample matrix. The results met the acceptance criteria.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The samples were diluted prior to analysis of uranium to reduce interferences. The required detection limits were achieved for all analytes.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

Chromatography Peak Integration

The integration of analyte peaks was reviewed for all ion chromatography data. There were no manual integrations performed and all peak integrations were satisfactory.

Electronic Data Deliverable File

The electronic data deliverable (EDD) file arrived on October 11, 2005. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

## Field Analyses/Activities

The following information summarizes the field analyses and activities for this sampling event period.

Field Activities

All monitor well results were qualified with an "F" flag in the database indicating the wells were purged and sampled using the low-flow sampling method. Extraction wells are not sampled using the low-flow sampling method.

An equipment blank was collected and analyzed for the same constituents as the Moab environmental samples. Analyte concentrations measured in the equipment blank were below their respective contract required detection limits, therefore all equipment blank results are considered acceptable. Duplicate samples were collected from locations 0407 and 0477. There are no established regulatory criteria for the evaluation of field duplicate samples; therefore, U.S. Environmental Protection Agency (EPA) guidance for laboratory duplicates (which is conservative for field duplicates) was used to assess the precision of the field duplicates. Duplicate results met the laboratory duplicate criteria of +/- 20 RPD and are considered acceptable.

## Certification

Results were reported in correct units for all analytes requested. Appropriate contract-required laboratory qualifiers and target analyte lists were used. The required detection limits were met when possible or an explanation of why they were not met was given in the laboratory case narrative. All analytical quality control criteria were met except as qualified on the Ground Water Quality Data by Parameter, Surface Water Quality by Parameter, or equipment/trip blank database printouts. The meaning of data qualifiers is defined on the database printouts or defined in the EPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media Multi-Concentration, Document Number ILMO2.0, 1991. All data in this package are considered validated and may be treated as final results.

Laboratory Validation Lead: Steve Donivan — Steve Donivan — 11-29-05 — Date

Field Activities Validation Lead: Jan Caplfield For — Jeff Price — 11-29-05 — Date

# Attachment 1

# Data Presentation

# Minimums and Maximums Report

## Minimums and Maximums Report

The Minimums and Maximums Report is generated by a data validation application (DataVal) used to query the SEEPro database. The DataVal compares the new data set with historical data and lists all new data that fall outside the historical data range. Values listed in the report are further screened using the following criteria. Results are not considered anomalous if (1) identified low concentrations are the result of low detection limits; (2) the concentration detected is within 50 percent of historical minimum or maximum values; (3) there were fewer than five historical samples for comparison.

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT -- No Field Parameters
LAB CODE: PAR, PARAGON (Fort Collins, CO)
LAB REQUISITION(S): 05080221
HISTORY BEGIN DATE: comparing to all historical data
REPORT DATE: 11/07/05 10:12:53: AM

| SITE CODE | LOCATION CODE | SAMPLE DATE | ANALYTE | CURRENT RESULT | CURRENT QUALIFIERS LAB | CURRENT QUALIFIERS DATA | HISTORICAL MAXIMUM RESULT | HISTORICAL MAXIMUM QUALIFIERS LAB | HISTORICAL MAXIMUM QUALIFIERS DATA | HISTORICAL MINIMUM RESULT | HISTORICAL MINIMUM QUALIFIERS LAB | HISTORICAL MINIMUM QUALIFIERS DATA | COUNT N | COUNT N BELOW DETECT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MOA01 | 0470 | 08/24/2005 | Ammonia Total as N | 18 | | | 1180 | | | 40 | | | 24 | 0 |
| MOA01 | 0470 | 08/24/2005 | Chloride | 77 | | | 9100 | | F | 250 | | | 24 | 0 |
| MOA01 | 0470 | 08/24/2005 | Sulfate | 390 | | | 12000 | | | 830 | | | 24 | 0 |
| MOA01 | 0470 | 08/24/2005 | Uranium | 0.2 | | | 4.6 | | | 0.47 | | | 24 | 0 |
| MOA01 | 0474 | 08/25/2005 | Uranium | 3.9 | | | 3.7 | | | 0.52 | | | 24 | 0 |
| MOA01 | 0548 | 08/25/2005 | Ammonia Total as N | 660 | | | 1400 | | | 720 | | | 12 | 0 |
| MOA01 | 0562 | 08/25/2005 | Chloride | 78 | | QF | 550 | | FQ | 93 | | QF | 5 | 0 |
| MOA01 | 0562 | 08/25/2005 | Total Dissolved Solids | 540 | | QF | 4300 | | FQ | 750 | | QF | 5 | 0 |
| MOA01 | 0563 | 08/25/2005 | Chloride | 68 | | QF | 2000 | | QF | 120 | | QF | 7 | 0 |
| MOA01 | 0563 | 08/25/2005 | Sulfate | 160 | | QF | 4700 | | QF | 360 | | QF | 7 | 0 |
| MOA01 | 0563 | 08/25/2005 | Total Dissolved Solids | 420 | | QF | 5500 | | FQ | 950 | | QF | 7 | 0 |
| MOA01 | 0565 | 08/26/2005 | Ammonia Total as N | 14 | | QF | 53 | | F | 26 | | FQ | 6 | 0 |
| MOA01 | 0565 | 08/26/2005 | Chloride | 77 | | QF | 400 | | FQ | 230 | | QF | 5 | 0 |
| MOA01 | 0565 | 08/26/2005 | Sulfate | 260 | | QF | 670 | | FQ | 460 | | QF | 5 | 0 |
| MOA01 | 0565 | 08/26/2005 | Total Dissolved Solids | 560 | | QF | 2000 | | FQ | 1200 | | QF | 5 | 0 |
| MOA01 | 0565 | 08/26/2005 | Uranium | 0.0025 | | QF | 0.00077 | | QF | 0.00021 | | UFQ | 5 | 1 |

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT -- No Field Parameters
LAB CODE: PAR, PARAGON (Fort Collins, CO)
LAB REQUISITION(S): 05080221
HISTORY BEGIN DATE: comparing to all historical data
REPORT DATE: 11/07/05 10:12:53: AM

| SITE CODE | LOCATION CODE | SAMPLE DATE | ANALYTE | CURRENT RESULT | CURRENT QUALIFIERS LAB | CURRENT QUALIFIERS DATA | HISTORICAL MAXIMUM RESULT | HISTORICAL MAXIMUM QUALIFIERS LAB | HISTORICAL MAXIMUM QUALIFIERS DATA | HISTORICAL MINIMUM RESULT | HISTORICAL MINIMUM QUALIFIERS LAB | HISTORICAL MINIMUM QUALIFIERS DATA | COUNT N | COUNT N BELOW DETECT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

| | |
|---|---|
| * | Replicate analysis not within control limits. |
| + | Correlation coefficient for MSA < 0.995. |
| A | TIC is a suspected aldol-condensation product. |
| B | Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank. |
| E | Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS. |
| Z | Laboratory defined (USEPA CLP organic) qualifier, see case narrative. |
| H | Holding time expired, value suspect. |
| I | Increased detection limit due to required dilution. |
| C | Pesticide result confirmed by GC-MS. |
| M | GFAA duplicate injection precision not met. |
| N | Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC). |
| S | Result determined by method of standard addition (MSA). |
| U | Analytical result below detection limit. |
| W | Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance. |
| D | Analyte determined in diluted sample. |
| P | > 25% difference in detected pesticide or Arochlor concentrations between 2 columns. |
| X | Laboratory defined (USEPA CLP organic) qualifier, see case narrative. |
| Y | Laboratory defined (USEPA CLP organic) qualifier, see case narrative. |
| > | Result above upper detection limit. |
| J | Estimated |

DATA QUALIFIERS:

| | | | | | |
|---|---|---|---|---|---|
| J | Estimated value. | F | Low flow sampling method used. | G | Possible grout contamination, pH > 9. |
| L | Less than 3 bore volumes purged prior to sampling. | R | Unusable result. | X | Location is undefined. |
| U | Parameter analyzed for but was not detected. | Q | Qualitative result due to sampling technique | | |

# Anomalous Data Review Checksheet

# Anomalous Data Review Checksheet

**Site:** Moab Processing Site **Sampling Date:** August 23-26, 2005

Reviewer: Jeff Price (Name) J Price (Signature) 11/29/05 (Date)

Site Lead: John R. Ford (Name) John Ford (Signature) 11-18-05 (Date)

| Loc. No. | Analyte | Type of Anomaly | Disposition |
|---|---|---|---|
| 0470 | Ammonia total as N | Low | |
| 0470 | Chloride | Low | |
| 0470 | Sulfate | Low | |
| 0470 | Uranium | Low | |
| 0563 | Sulfate | Low | |
| 0563 | TDS | Low | |
| 0565 | Chloride | Low | |
| 0565 | Sulfate | Low | |
| 0565 | TDS | Low | |
| 0565 | Uranium | High | |

# Water Quality Data

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Total (As CaCO3 | mg/L | 0216 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 195 | | | # | - | - |
| | mg/L | 0245 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 192 | | | # | - | - |
| | mg/L | 0403 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 270 | | F | # | - | - |
| | mg/L | 0407 | WL | 08/24/2005 | 0001 | 17.00 - 17.00 | 350 | | F | # | - | - |
| | mg/L | 0470 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 900 | | | # | - | - |
| | mg/L | 0471 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 724 | | | # | - | - |
| | mg/L | 0472 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 796 | | | # | - | - |
| | mg/L | 0473 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 880 | | | # | - | - |
| | mg/L | 0474 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 942 | | | # | - | - |
| | mg/L | 0475 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 616 | | | # | - | - |
| | mg/L | 0476 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 614 | | | # | - | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 814 | | | # | - | - |
| | mg/L | 0478 | WL, EXT | 08/25/2005 | 0001 | 9.60 - 23.90 | 620 | | | # | - | - |
| | mg/L | 0479 | WL, EXT | 08/25/2005 | 0001 | 9.30 - 23.60 | 514 | | | # | - | - |
| | mg/L | 0483 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 784 | | F | # | - | - |
| | mg/L | 0547 | TS, INFL | 08/25/2005 | 0001 | 0.00 - 0.00 | 722 | | | # | - | - |
| | mg/L | 0548 | TS, EPND | 08/25/2005 | 0001 | 0.00 - 0.00 | 387 | | | # | - | - |
| | mg/L | 0557 | WL | 08/24/2005 | 0001 | 40.00 - 40.00 | 600 | | F | # | - | - |
| | mg/L | 0559 | WL | 08/24/2005 | 0001 | 19.00 - 19.00 | 390 | | F | # | - | - |
| | mg/L | 0560 | WL | 08/24/2005 | 0001 | 31.00 - 31.00 | 510 | | F | # | - | - |
| | mg/L | SMI-PW02 | WL | 08/25/2005 | 0001 | 20.04 - 60.04 | 644 | | | # | - | - |
| Ammonia Total as N | mg/L | 0216 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 0.1 | U | | # | 0.1 | - |
| | mg/L | 0245 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 0.1 | U | | # | 0.1 | - |
| | mg/L | 0403 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 62 | | F | # | 20 | - |
| | mg/L | 0407 | WL | 08/24/2005 | 0001 | 17.00 - 17.00 | 19 | | F | # | 0.5 | - |
| | mg/L | 0407 | WL | 08/24/2005 | 0002 | 13.33 - 18.25 | 18 | | F | # | 0.5 | - |

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia Total as N | mg/L | 0470 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 430 | | | # | 20 | - |
| | mg/L | 0471 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 630 | | | # | 20 | - |
| | mg/L | 0472 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 640 | | | # | 20 | - |
| | mg/L | 0473 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 370 | | | # | 20 | - |
| | mg/L | 0474 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 400 | | | # | 20 | - |
| | mg/L | 0475 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 320 | | | # | 20 | - |
| | mg/L | 0476 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 220 | | | # | 20 | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 250 | | | # | 20 | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | 0002 | 10.30 - 19.70 | 250 | | | # | 20 | - |
| | mg/L | 0478 | WL, EXT | 08/25/2005 | 0001 | 9.60 - 23.90 | 370 | | | # | 20 | - |
| | mg/L | 0479 | WL, EXT | 08/25/2005 | 0001 | 9.30 - 23.60 | 300 | | | # | 20 | - |
| | mg/L | 0483 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 430 | | F | # | 20 | - |
| | mg/L | 0547 | TS, INFL | 08/25/2005 | 0001 | 0.00 - 0.00 | 550 | | | # | 20 | - |
| | mg/L | 0548 | TS, EPND | 08/25/2005 | 0001 | 0.00 - 0.00 | 660 | | | # | 20 | - |
| | mg/L | 0557 | WL | 08/24/2005 | 0001 | 40.00 - 40.00 | 1500 | | F | # | 50 | - |
| | mg/L | 0559 | WL | 08/24/2005 | 0001 | 19.00 - 19.00 | 140 | | F | # | 20 | - |
| | mg/L | 0560 | WL | 08/24/2005 | 0001 | 31.00 - 31.00 | 1600 | | F | # | 50 | - |
| | mg/L | 0562 | WL, PZ | 08/25/2005 | 0001 | 1.53 - 1.53 | 6.8 | | FQ | # | 0.2 | - |
| | mg/L | 0563 | WL, PZ | 08/25/2005 | 0001 | 3.95 - 3.95 | 17 | | FQ | # | 0.5 | - |
| | mg/L | SMI-PW02 | WL | 08/25/2005 | 0001 | 20.04 - 60.04 | 880 | | | # | 20 | - |
| Chloride | mg/L | 0216 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 94 | | | # | 2 | - |
| | mg/L | 0245 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 92 | | | # | 2 | - |
| | mg/L | 0403 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 280 | | F | # | 10 | - |
| | mg/L | 0407 | WL | 08/24/2005 | 0001 | 17.00 - 17.00 | 82 | | F | # | 4 | - |
| | mg/L | 0407 | WL | 08/24/2005 | 0002 | 13.33 - 18.25 | 77 | | F | # | 4 | - |
| | mg/L | 0470 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 3300 | | | # | 40 | - |

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | mg/L | 0471 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 5700 | | | # | 100 | - |
| | mg/L | 0472 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 4500 | | | # | 100 | - |
| | mg/L | 0473 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 3500 | | | # | 40 | - |
| | mg/L | 0474 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 4500 | | | # | 100 | - |
| | mg/L | 0475 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 3300 | | | # | 40 | - |
| | mg/L | 0476 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 2400 | | | # | 40 | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 2500 | | | # | 40 | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | 0002 | 10.30 - 19.70 | 2400 | | | # | 40 | - |
| | mg/L | 0478 | WL, EXT | 08/25/2005 | 0001 | 9.60 - 23.90 | 3800 | | | # | 40 | - |
| | mg/L | 0479 | WL, EXT | 08/25/2005 | 0001 | 9.30 - 23.60 | 2200 | | | # | 40 | - |
| | mg/L | 0483 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 3800 | | F | # | 40 | - |
| | mg/L | 0547 | TS, INFL | 08/25/2005 | 0001 | 0.00 - 0.00 | 7000 | | | # | 100 | - |
| | mg/L | 0548 | TS, EPND | 08/25/2005 | 0001 | 0.00 - 0.00 | 15000 | | | # | 200 | - |
| | mg/L | 0557 | WL | 08/24/2005 | 0001 | 40.00 - 40.00 | 24000 | | F | # | 400 | - |
| | mg/L | 0559 | WL | 08/24/2005 | 0001 | 19.00 - 19.00 | 1200 | | F | # | 20 | - |
| | mg/L | 0560 | WL | 08/24/2005 | 0001 | 31.00 - 31.00 | 38000 | | F | # | 1000 | - |
| | mg/L | 0562 | WL, PZ | 08/25/2005 | 0001 | 1.53 - 1.53 | 78 | | FQ | # | 2 | - |
| | mg/L | 0563 | WL, PZ | 08/25/2005 | 0001 | 3.95 - 3.95 | 68 | | FQ | # | 2 | - |
| | mg/L | SMI-PW02 | WL | 08/25/2005 | 0001 | 20.04 - 60.04 | 24000 | | | # | 400 | - |
| Dissolved Oxygen | mg/L | 0216 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 9.30 | | | # | - | - |
| | mg/L | 0245 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 8.93 | | | # | - | - |
| | mg/L | 0403 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 1.50 | | F | # | - | - |
| | mg/L | 0407 | WL | 08/24/2005 | N001 | 17.00 - 17.00 | 1.76 | | F | # | - | - |
| | mg/L | 0470 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 1.65 | | | # | - | - |
| | mg/L | 0471 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 1.62 | | | # | - | - |
| | mg/L | 0472 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 3.24 | | | # | - | - |

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dissolved Oxygen | mg/L | 0473 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 2.04 | | | # | - | - |
| | mg/L | 0474 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 6.10 | | | # | - | - |
| | mg/L | 0475 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 3.40 | | | # | - | - |
| | mg/L | 0476 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 5.41 | | | # | - | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 3.59 | | | # | - | - |
| | mg/L | 0478 | WL, EXT | 08/25/2005 | N001 | 9.60 - 23.90 | 5.95 | | | # | - | - |
| | mg/L | 0479 | WL, EXT | 08/25/2005 | N001 | 9.30 - 23.60 | 3.50 | | | # | - | - |
| | mg/L | 0483 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 2.22 | | F | # | - | - |
| | mg/L | 0547 | TS, INFL | 08/25/2005 | N001 | 0.00 - 0.00 | 4.95 | | | # | - | - |
| | mg/L | 0548 | TS, EPND | 08/25/2005 | N001 | 0.00 - 0.00 | 4.72 | | | # | - | - |
| | mg/L | 0557 | WL | 08/24/2005 | N001 | 40.00 - 40.00 | 1.46 | | F | # | - | - |
| | mg/L | 0559 | WL | 08/24/2005 | N001 | 19.00 - 19.00 | 1.49 | | F | # | - | - |
| | mg/L | 0560 | WL | 08/24/2005 | N001 | 31.00 - 31.00 | 1.30 | | F | # | - | - |
| | mg/L | 0562 | WL, PZ | 08/25/2005 | N001 | 1.53 - 1.53 | 3.62 | | FQ | # | - | - |
| | mg/L | 0563 | WL, PZ | 08/25/2005 | N001 | 3.95 - 3.95 | 4.97 | | FQ | # | - | - |
| | mg/L | SMI-PW02 | WL | 08/25/2005 | N001 | 20.04 - 60.04 | 3.13 | | | # | - | - |
| Oxidation Reduction Potent | mV | 0216 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 32.3 | | | # | - | - |
| | mV | 0245 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 85 | | | # | - | - |
| | mV | 0403 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 106 | | F | # | - | - |
| | mV | 0407 | WL | 08/24/2005 | N001 | 17.00 - 17.00 | 7.5 | | F | # | - | - |
| | mV | 0470 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 198.8 | | | # | - | - |
| | mV | 0471 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 192.6 | | | # | - | - |
| | mV | 0472 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 190.3 | | | # | - | - |
| | mV | 0473 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 187.9 | | | # | - | - |
| | mV | 0474 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 183.6 | | | # | - | - |
| | mV | 0475 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 183.0 | | | # | - | - |

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oxidation Reduction Potent | mV | 0476 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 181.3 | | | # | - | - |
| | mV | 0477 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 188.0 | | | # | - | - |
| | mV | 0478 | WL, EXT | 08/25/2005 | N001 | 9.60 - 23.90 | 187.3 | | | # | - | - |
| | mV | 0479 | WL, EXT | 08/25/2005 | N001 | 9.30 - 23.60 | 181.0 | | | # | - | - |
| | mV | 0483 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 110 | | F | # | - | - |
| | mV | 0547 | TS, INFL | 08/25/2005 | N001 | 0.00 - 0.00 | 200 | | | # | - | - |
| | mV | 0548 | TS, EPND | 08/25/2005 | N001 | 0.00 - 0.00 | 199 | | | # | - | - |
| | mV | 0557 | WL | 08/24/2005 | N001 | 40.00 - 40.00 | 91 | | F | # | - | - |
| | mV | 0559 | WL | 08/24/2005 | N001 | 19.00 - 19.00 | 104 | | F | # | - | - |
| | mV | 0560 | WL | 08/24/2005 | N001 | 31.00 - 31.00 | 120 | | F | # | - | - |
| | mV | 0562 | WL, PZ | 08/25/2005 | N001 | 1.53 - 1.53 | -110 | | FQ | # | - | - |
| | mV | 0563 | WL, PZ | 08/25/2005 | N001 | 3.95 - 3.95 | -241 | | FQ | # | - | - |
| | mV | SMI-PW02 | WL | 08/25/2005 | N001 | 20.04 - 60.04 | 210 | | | # | - | - |
| pH | s.u. | 0216 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 8.32 | | | # | - | - |
| | s.u. | 0245 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 8.27 | | | # | - | - |
| | s.u. | 0403 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 7.37 | | F | # | - | - |
| | s.u. | 0407 | WL | 08/24/2005 | N001 | 17.00 - 17.00 | 6.93 | | F | # | - | - |
| | s.u. | 0470 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 6.71 | | | # | - | - |
| | s.u. | 0471 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 6.64 | | | # | - | - |
| | s.u. | 0472 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 6.64 | | | # | - | - |
| | s.u. | 0473 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 6.62 | | | # | - | - |
| | s.u. | 0474 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 6.62 | | | # | - | - |
| | s.u. | 0475 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 6.64 | | | # | - | - |
| | s.u. | 0476 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 6.66 | | | # | - | - |
| | s.u. | 0477 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 6.61 | | | # | - | - |
| | s.u. | 0478 | WL, EXT | 08/25/2005 | N001 | 9.60 - 23.90 | 6.67 | | | # | - | - |

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pH | s.u. | 0479 | WL, EXT | 08/25/2005 | N001 | 9.30 - 23.60 | 6.71 | | | # | - | - |
| | s.u. | 0483 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 7.21 | | F | # | - | - |
| | s.u. | 0547 | TS, INFL | 08/25/2005 | N001 | 0.00 - 0.00 | 6.65 | | | # | - | - |
| | s.u. | 0548 | TS, EPND | 08/25/2005 | N001 | 0.00 - 0.00 | 7.39 | | | # | - | - |
| | s.u. | 0557 | WL | 08/24/2005 | N001 | 40.00 - 40.00 | 6.57 | | F | # | - | - |
| | s.u. | 0559 | WL | 08/24/2005 | N001 | 19.00 - 19.00 | 7.15 | | F | # | - | - |
| | s.u. | 0560 | WL | 08/24/2005 | N001 | 31.00 - 31.00 | 6.51 | | F | # | - | - |
| | s.u. | 0562 | WL, PZ | 08/25/2005 | N001 | 1.53 - 1.53 | 7.94 | | FQ | # | - | - |
| | s.u. | 0563 | WL, PZ | 08/25/2005 | N001 | 3.95 - 3.95 | 9.25 | | FQ | # | - | - |
| | s.u. | SMI-PW02 | WL | 08/25/2005 | N001 | 20.04 - 60.04 | 6.54 | | | # | - | - |
| Specific Conductance | umhos/cm | 0216 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 1169 | | | # | - | - |
| | umhos/cm | 0245 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 1150 | | | # | - | - |
| | umhos/cm | 0403 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 3272 | | F | # | - | - |
| | umhos/cm | 0407 | WL | 08/24/2005 | N001 | 17.00 - 17.00 | 1494 | | F | # | - | - |
| | umhos/cm | 0470 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 19458 | | | # | - | - |
| | umhos/cm | 0471 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 25301 | | | # | - | - |
| | umhos/cm | 0472 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 24020 | | | # | - | - |
| | umhos/cm | 0473 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 23048 | | | # | - | - |
| | umhos/cm | 0474 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 24581 | | | # | - | - |
| | umhos/cm | 0475 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 22303 | | | # | - | - |
| | umhos/cm | 0476 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 17711 | | | # | - | - |
| | umhos/cm | 0477 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 18084 | | | # | - | - |
| | umhos/cm | 0478 | WL, EXT | 08/25/2005 | N001 | 9.60 - 23.90 | 19460 | | | # | - | - |
| | umhos/cm | 0479 | WL, EXT | 08/25/2005 | N001 | 9.30 - 23.60 | 15998 | | | # | - | - |
| | umhos/cm | 0483 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 18854 | | F | # | - | - |
| | umhos/cm | 0547 | TS, INFL | 08/25/2005 | N001 | 0.00 - 0.00 | 30847 | | | # | - | - |

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | umhos/cm | 0548 | TS, EPND | 08/25/2005 | N001 | 0.00 - 0.00 | 47602 | | | # | - | - |
| | umhos/cm | 0557 | WL | 08/24/2005 | N001 | 40.00 - 40.00 | 66280 | | F | # | - | - |
| | umhos/cm | 0559 | WL | 08/24/2005 | N001 | 19.00 - 19.00 | 7715 | | F | # | - | - |
| | umhos/cm | 0560 | WL | 08/24/2005 | N001 | 31.00 - 31.00 | 90179 | | F | # | - | - |
| | umhos/cm | 0562 | WL, PZ | 08/25/2005 | N001 | 1.53 - 1.53 | 6493 | | FQ | # | - | - |
| | umhos/cm | 0563 | WL, PZ | 08/25/2005 | N001 | 3.95 - 3.95 | 814 | | FQ | # | - | - |
| | umhos/cm | SMI-PW02 | WL | 08/25/2005 | N001 | 20.04 - 60.04 | 64057 | | | # | - | - |
| Sulfate | mg/L | 0216 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 310 | | | # | 5 | - |
| | mg/L | 0245 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 300 | | | # | 5 | - |
| | mg/L | 0403 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 970 | | F | # | 25 | - |
| | mg/L | 0407 | WL | 08/24/2005 | 0001 | 17.00 - 17.00 | 390 | | F | # | 10 | - |
| | mg/L | 0407 | WL | 08/24/2005 | 0002 | 13.33 - 18.25 | 390 | | F | # | 10 | - |
| | mg/L | 0470 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 6400 | | | # | 100 | - |
| | mg/L | 0471 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 7500 | | | # | 100 | - |
| | mg/L | 0472 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 7800 | | | # | 100 | - |
| | mg/L | 0473 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 8200 | | | # | 100 | - |
| | mg/L | 0474 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 9500 | | | # | 100 | - |
| | mg/L | 0475 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 8800 | | | # | 100 | - |
| | mg/L | 0476 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 7500 | | | # | 100 | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 7400 | | | # | 100 | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | 0002 | 10.30 - 19.70 | 7300 | | | # | 100 | - |
| | mg/L | 0478 | WL, EXT | 08/25/2005 | 0001 | 9.60 - 23.90 | 7200 | | | # | 100 | - |
| | mg/L | 0479 | WL, EXT | 08/25/2005 | 0001 | 9.30 - 23.60 | 5600 | | | # | 100 | - |
| | mg/L | 0483 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 4200 | | F | # | 100 | - |
| | mg/L | 0547 | TS, INFL | 08/25/2005 | 0001 | 0.00 - 0.00 | 8400 | | | # | 250 | - |
| | mg/L | 0548 | TS, EPND | 08/25/2005 | 0001 | 0.00 - 0.00 | 9300 | | | # | 250 | - |

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | mg/L | 0557 | WL | 08/24/2005 | 0001 | 40.00 - 40.00 | 9200 | | F | # | 250 | - |
| | mg/L | 0559 | WL | 08/24/2005 | 0001 | 19.00 - 19.00 | 2100 | | F | # | 50 | - |
| | mg/L | 0560 | WL | 08/24/2005 | 0001 | 31.00 - 31.00 | 8800 | | F | # | 500 | - |
| | mg/L | 0562 | WL, PZ | 08/25/2005 | 0001 | 1.53 - 1.53 | 240 | | FQ | # | 5 | - |
| | mg/L | 0563 | WL, PZ | 08/25/2005 | 0001 | 3.95 - 3.95 | 160 | | FQ | # | 5 | - |
| | mg/L | SMI-PW02 | WL | 08/25/2005 | 0001 | 20.04 - 60.04 | 7900 | | | # | 250 | - |
| Temperature | C | 0216 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 28.76 | | | # | - | - |
| | C | 0245 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 27.36 | | | # | - | - |
| | C | 0403 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 16.23 | | F | # | - | - |
| | C | 0407 | WL | 08/24/2005 | N001 | 17.00 - 17.00 | 16.76 | | F | # | - | - |
| | C | 0470 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 16.01 | | | # | - | - |
| | C | 0471 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 15.99 | | | # | - | - |
| | C | 0472 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 16.05 | | | # | - | - |
| | C | 0473 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 17.16 | | | # | - | - |
| | C | 0474 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 17.57 | | | # | - | - |
| | C | 0475 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 16.54 | | | # | - | - |
| | C | 0476 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 16.04 | | | # | - | - |
| | C | 0477 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 16.24 | | | # | - | - |
| | C | 0478 | WL, EXT | 08/25/2005 | N001 | 9.60 - 23.90 | 16.15 | | | # | - | - |
| | C | 0479 | WL, EXT | 08/25/2005 | N001 | 9.30 - 23.60 | 16.66 | | | # | - | - |
| | C | 0483 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 16.85 | | F | # | - | - |
| | C | 0547 | TS, INFL | 08/25/2005 | N001 | 0.00 - 0.00 | 18.62 | | | # | - | - |
| | C | 0548 | TS, EPND | 08/25/2005 | N001 | 0.00 - 0.00 | 23.52 | | | # | - | - |
| | C | 0557 | WL | 08/24/2005 | N001 | 40.00 - 40.00 | 17.92 | | F | # | - | - |
| | C | 0559 | WL | 08/24/2005 | N001 | 19.00 - 19.00 | 15.36 | | F | # | - | - |
| | C | 0560 | WL | 08/24/2005 | N001 | 31.00 - 31.00 | 15.08 | | F | # | - | - |

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature | C | 0562 | WL, PZ | 08/25/2005 | N001 | 1.53 - 1.53 | 26.99 | | FQ | # | - | - |
| | C | 0563 | WL, PZ | 08/25/2005 | N001 | 3.95 - 3.95 | 25.29 | | FQ | # | - | - |
| | C | SMI-PW02 | WL | 08/25/2005 | N001 | 20.04 - 60.04 | 18.69 | | | # | - | - |
| Total Dissolved Solids | mg/L | 0216 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 750 | | | # | 20 | - |
| | mg/L | 0245 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 770 | | | # | 20 | - |
| | mg/L | 0403 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 2100 | | F | # | 80 | - |
| | mg/L | 0407 | WL | 08/24/2005 | 0001 | 17.00 - 17.00 | 980 | | F | # | 40 | - |
| | mg/L | 0407 | WL | 08/24/2005 | 0002 | 13.33 - 18.25 | 990 | | F | # | 40 | - |
| | mg/L | 0470 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 15000 | | | # | 400 | - |
| | mg/L | 0471 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 19000 | | | # | 400 | - |
| | mg/L | 0472 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 19000 | | | # | 400 | - |
| | mg/L | 0473 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 19000 | | | # | 400 | - |
| | mg/L | 0474 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 22000 | | | # | 400 | - |
| | mg/L | 0475 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 19000 | | | # | 400 | - |
| | mg/L | 0476 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 15000 | | | # | 400 | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 15000 | | | # | 400 | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | 0002 | 10.30 - 19.70 | 15000 | | | # | 400 | - |
| | mg/L | 0478 | WL, EXT | 08/25/2005 | 0001 | 9.60 - 23.90 | 17000 | | | # | 400 | - |
| | mg/L | 0479 | WL, EXT | 08/25/2005 | 0001 | 9.30 - 23.60 | 12000 | | | # | 400 | - |
| | mg/L | 0483 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 12000 | | F | # | 400 | - |
| | mg/L | 0547 | TS, INFL | 08/25/2005 | 0001 | 0.00 - 0.00 | 24000 | | | # | 400 | - |
| | mg/L | 0548 | TS, EPND | 08/25/2005 | 0001 | 0.00 - 0.00 | 35000 | | | # | 1000 | - |
| | mg/L | 0557 | WL | 08/24/2005 | 0001 | 40.00 - 40.00 | 45000 | | F | # | 2000 | - |
| | mg/L | 0559 | WL | 08/24/2005 | 0001 | 19.00 - 19.00 | 5100 | | F | # | 200 | - |
| | mg/L | 0560 | WL | 08/24/2005 | 0001 | 31.00 - 31.00 | 65000 | | F | # | 2000 | - |
| | mg/L | 0562 | WL, PZ | 08/25/2005 | 0001 | 1.53 - 1.53 | 540 | | FQ | # | 80 | - |

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | mg/L | 0563 | WL, PZ | 08/25/2005 | 0001 | 3.95 - 3.95 | 420 | | FQ | # | 80 | - |
| | mg/L | SMI-PW02 | WL | 08/25/2005 | 0001 | 20.04 - 60.04 | 47000 | | | # | 1000 | - |
| Turbidity | NTU | 0216 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 157 | | | # | - | - |
| | NTU | 0245 | SL, RIV | 08/24/2005 | N001 | 0.33 - 0.33 | 118 | | | # | - | - |
| | NTU | 0403 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 6.26 | | F | # | - | - |
| | NTU | 0407 | WL | 08/24/2005 | N001 | 17.00 - 17.00 | 1.33 | | F | # | - | - |
| | NTU | 0470 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 0.84 | | | # | - | - |
| | NTU | 0471 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 0.79 | | | # | - | - |
| | NTU | 0472 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 1.37 | | | # | - | - |
| | NTU | 0473 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 1.90 | | | # | - | - |
| | NTU | 0474 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 1.19 | | | # | - | - |
| | NTU | 0475 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 1.94 | | | # | - | - |
| | NTU | 0476 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 1.13 | | | # | - | - |
| | NTU | 0477 | WL, EXT | 08/25/2005 | N001 | 10.30 - 19.70 | 1.00 | | | # | - | - |
| | NTU | 0478 | WL, EXT | 08/25/2005 | N001 | 9.60 - 23.90 | 0.88 | | | # | - | - |
| | NTU | 0479 | WL, EXT | 08/25/2005 | N001 | 9.30 - 23.60 | 0.54 | | | # | - | - |
| | NTU | 0483 | WL | 08/24/2005 | N001 | 18.00 - 18.00 | 2.21 | | F | # | - | - |
| | NTU | 0547 | TS, INFL | 08/25/2005 | N001 | 0.00 - 0.00 | 0.72 | | | # | - | - |
| | NTU | 0548 | TS, EPND | 08/25/2005 | N001 | 0.00 - 0.00 | 5.64 | | | # | - | - |
| | NTU | 0557 | WL | 08/24/2005 | N001 | 40.00 - 40.00 | 0.50 | | F | # | - | - |
| | NTU | 0559 | WL | 08/24/2005 | N001 | 19.00 - 19.00 | 1.00 | | F | # | - | - |
| | NTU | 0560 | WL | 08/24/2005 | N001 | 31.00 - 31.00 | 1.32 | | F | # | - | - |
| | NTU | 0562 | WL, PZ | 08/25/2005 | N001 | 1.53 - 1.53 | 1000 | > | FQ | # | - | - |
| | NTU | 0563 | WL, PZ | 08/25/2005 | N001 | 3.95 - 3.95 | 1000 | > | FQ | # | - | - |
| | NTU | SMI-PW02 | WL | 08/25/2005 | N001 | 20.04 - 60.04 | 1.01 | | | # | - | - |
| Uranium | mg/L | 0216 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 0.011 | | | # | 3.8E-06 | - |

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Uranium | mg/L | 0245 | SL, RIV | 08/24/2005 | 0001 | 0.33 - 0.33 | 0.0099 | | | # | 3.8E-06 | - |
| | mg/L | 0403 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 0.310 | | F | # | 3.8E-05 | - |
| | mg/L | 0407 | WL | 08/24/2005 | 0001 | 17.00 - 17.00 | 0.180 | | F | # | 1.9E-05 | - |
| | mg/L | 0407 | WL | 08/24/2005 | 0002 | 13.33 - 18.25 | 0.200 | | F | # | 3.8E-05 | - |
| | mg/L | 0470 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 2.200 | | | # | 0.00038 | - |
| | mg/L | 0471 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 2.600 | | | # | 0.00038 | - |
| | mg/L | 0472 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 2.900 | | | # | 0.00038 | - |
| | mg/L | 0473 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 3.500 | | | # | 0.00038 | - |
| | mg/L | 0474 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 3.900 | | | # | 0.00038 | - |
| | mg/L | 0475 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 3.300 | | | # | 0.00038 | - |
| | mg/L | 0476 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 2.700 | | | # | 0.00038 | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | 0001 | 10.30 - 19.70 | 2.800 | | | # | 0.00038 | - |
| | mg/L | 0477 | WL, EXT | 08/25/2005 | 0002 | 10.30 - 19.70 | 3.100 | | | # | 0.00038 | - |
| | mg/L | 0478 | WL, EXT | 08/25/2005 | 0001 | 9.60 - 23.90 | 2.800 | | | # | 0.00038 | - |
| | mg/L | 0479 | WL, EXT | 08/25/2005 | 0001 | 9.30 - 23.60 | 2.000 | | | # | 0.00038 | - |
| | mg/L | 0483 | WL | 08/24/2005 | 0001 | 18.00 - 18.00 | 0.880 | | F | # | 0.00038 | - |
| | mg/L | 0547 | TS, INFL | 08/25/2005 | 0001 | 0.00 - 0.00 | 2.800 | | | # | 0.00038 | - |
| | mg/L | 0548 | TS, EPND | 08/25/2005 | 0001 | 0.00 - 0.00 | 3.100 | | | # | 0.00038 | - |
| | mg/L | 0557 | WL | 08/24/2005 | 0001 | 40.00 - 40.00 | 2.200 | | F | # | 0.00038 | - |
| | mg/L | 0559 | WL | 08/24/2005 | 0001 | 19.00 - 19.00 | 0.670 | | F | # | 0.00019 | - |
| | mg/L | 0560 | WL | 08/24/2005 | 0001 | 31.00 - 31.00 | 1.500 | | F | # | 0.00038 | - |
| | mg/L | 0562 | WL, PZ | 08/25/2005 | 0001 | 1.53 - 1.53 | 0.0011 | | FQ | # | 3.8E-06 | - |
| | mg/L | 0563 | WL, PZ | 08/25/2005 | 0001 | 3.95 - 3.95 | 0.018 | | FQ | # | 3.8E-06 | - |
| | mg/L | SMI-PW02 | WL | 08/25/2005 | 0001 | 20.04 - 60.04 | 2.300 | | | # | 0.00038 | - |

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE MOA01, Moab Site
REPORT DATE: 11/8/2005 10:54 am

| PARAMETER | UNITS | LOCATION ID | LOC TYPE, SUBTYPE | SAMPLE: DATE | ID | DEPTH RANGE (FT BLS) | RESULT | QUALIFIERS: LAB | DATA | QA | DETECTION LIMIT | UN-CERTAINTY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

RECORDS: SELECTED FROM USEE200 WHERE site_code='MOA01' AND location_code in('0470','0471','0472','0473','0474','0475','0476','0477','0478','0479','SMI-PW02','0403','0407','0483','0557','0559','0560','0562','0563','0564','0565','0216','0245','0547','0548') AND quality_assurance = TRUE AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%' ) AND DATE_SAMPLED between #8/24/2005# and #8/25/2005#

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LOCATION TYPES: SL SURFACE LOCATION TS TREATMENT SYSTEM WL WELL

LOCATION SUBTYPES: EPND Evaporation Pond EXT Extraction Well INFL Treatment System Influent PZ Piezometer
RIV River

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

DATA QUALIFIERS:

- F Low flow sampling method used.
- G Possible grout contamination, pH > 9.
- J Estimated value.
- L Less than 3 bore volumes purged prior to sampling.
- Q Qualitative result due to sampling technique
- R Unusable result.
- U Parameter analyzed for but was not detected.
- X Location is undefined.

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

# Water Level Data

STATIC WATER LEVELS (USEE700) FOR SITE MOA01, Moab Site
REPORT DATE: 11/7/2005 10:26 am

| LOCATION CODE | FLOW CODE | TOP OF CASING ELEVATION (FT) | MEASUREMENT | | DEPTH FROM TOP OF CASING (FT) | WATER ELEVATION (FT) | WATER LEVEL FLAG |
|---|---|---|---|---|---|---|---|
| | | | DATE | TIME | | | |
| 0403 | O | 3968.95 | 08/24/2005 | 10:40 | 16.20 | 3952.75 | |
| 0407 | O | 3969.09 | 08/24/2005 | 16:15 | 16.95 | 3952.14 | |
| 0470 | | 3968.49 | 08/25/2005 | 09:10 | 13.10 | 3955.39 | |
| 0471 | | 3968.83 | 08/25/2005 | 09:22 | 13.45 | 3955.38 | |
| 0472 | | 3968.81 | 08/25/2005 | 09:32 | 13.16 | 3955.65 | |
| 0473 | | 3969.05 | 08/25/2005 | 09:41 | 13.57 | 3955.48 | |
| 0474 | | 3969.22 | 08/25/2005 | 09:56 | 12.94 | 3956.28 | |
| 0475 | | 3969.46 | 08/25/2005 | 10:08 | 13.96 | 3955.50 | |
| 0476 | | 3969.48 | 08/25/2005 | 10:28 | 13.58 | 3955.90 | |
| 0477 | | 3969.40 | 08/25/2005 | 10:38 | 13.40 | 3956.00 | |
| 0478 | | 3969.49 | 08/25/2005 | 10:53 | 14.72 | 3954.77 | |
| 0479 | | 3969.27 | 08/25/2005 | 11:06 | 12.62 | 3956.65 | |
| 0483 | | 3968.90 | 08/24/2005 | 11:40 | 16.68 | 3952.22 | |
| 0557 | | 3968.85 | 08/24/2005 | 11:23 | 15.97 | 3952.88 | |
| 0559 | | 3969.92 | 08/24/2005 | 10:18 | 17.31 | 3952.61 | |
| 0560 | | 3968.77 | 08/24/2005 | 09:16 | 16.02 | 3952.75 | |
| 0562 | | 3956.29 | 08/24/2005 | 13:23 | 3.62 | 3952.67 | |
| 0563 | | 3955.05 | 08/24/2005 | 13:29 | 1.22 | 3953.83 | |
| 0564 | | 3956.39 | 08/25/2005 | 14:25 | 3.60 | 3952.79 | |
| 0565 | | 3954.05 | 08/25/2005 | 14:34 | 1.63 | 3952.42 | |
| SMI-PW02 | O | 3967.48 | 08/25/2005 | 07:18 | 16.38 | 3951.10 | |

RECORDS: SELECTED FROM USEE700 WHERE site_code='MOA01' AND location_code in('0470','0471','0472','0473','0474','0475','0476','0477','0478','0479','SMI-PW02','0403','0407','0483','0557','0559','0560','0562','0563','0564','0565','0216','0245','0547','0548') AND LOG_DATE between #8/23/2005# and #8/26/2005#

FLOW CODES: O ON-SITE

WATER LEVEL FLAGS:

# Blanks

BLANKS REPORT
LAB CODE: PAR, PARAGON (Fort Collins, CO)
LAB REQUISITION(S): 05080221
REPORT DATE: 11/07/05 10:12:36: AM

| PARAMETER | SITE CODE | LOCATION ID | SAMPLE DATE | ID | UNITS | RESULT | QUALIFIERS LAB | DATA | DETECTION LIMIT | UNCERTAINTY | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia Total as N | MOA01 | 0999 | 08/24/2005 | 0001 | mg/L | 0.1 | U | | 0.1 | | E |
| Chloride | MOA01 | 0999 | 08/24/2005 | 0001 | mg/L | 0.2 | U | | 0.2 | | E |
| Sulfate | MOA01 | 0999 | 08/24/2005 | 0001 | mg/L | 0.5 | U | | 0.5 | | E |
| Total Dissolved Solids | MOA01 | 0999 | 08/24/2005 | 0001 | mg/L | 20 | U | | 20 | | E |
| Uranium | MOA01 | 0999 | 08/24/2005 | 0001 | mg/L | 0.00004 | B | U | 0.0000038 | | E |

BLANKS REPORT
LAB CODE: PAR, PARAGON (Fort Collins, CO)
LAB REQUISITION(S): 05080221
REPORT DATE: 11/07/05 10:12:36: AM

| PARAMETER | SITE CODE | LOCATION ID | SAMPLE DATE | ID | UNITS | RESULT | QUALIFIERS LAB | QUALIFIERS DATA | DETECTION LIMIT | UNCERTAINTY | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

| | |
|---|---|
| * | Replicate analysis not within control limits. |
| + | Correlation coefficient for MSA < 0.995. |
| A | TIC is a suspected aldol-condensation product. |
| B | Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank. |
| E | Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS. |
| Z | Laboratory defined (USEPA CLP organic) qualifier, see case narrative. |
| H | Holding time expired, value suspect. |
| I | Increased detection limit due to required dilution. |
| C | Pesticide result confirmed by GC-MS. |
| M | GFAA duplicate injection precision not met. |
| N | Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC). |
| S | Result determined by method of standard addition (MSA). |
| U | Analytical result below detection limit. |
| W | Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance. |
| D | Analyte determined in diluted sample. |
| P | > 25% difference in detected pesticide or Arochlor concentrations between 2 columns. |
| X | Laboratory defined (USEPA CLP organic) qualifier, see case narrative. |
| Y | Laboratory defined (USEPA CLP organic) qualifier, see case narrative. |
| > | Result above upper detection limit. |
| J | Estimated |

DATA QUALIFIERS:

| | | | | | |
|---|---|---|---|---|---|
| J | Estimated value. | F | Low flow sampling method used. | G | Possible grout contamination, pH > 9. |
| L | Less than 3 bore volumes purged prior to sampling. | R | Unusable result. | X | Location is undefined. |
| U | Parameter analyzed for but was not detected. | Q | Qualitative result due to sampling technique | | |

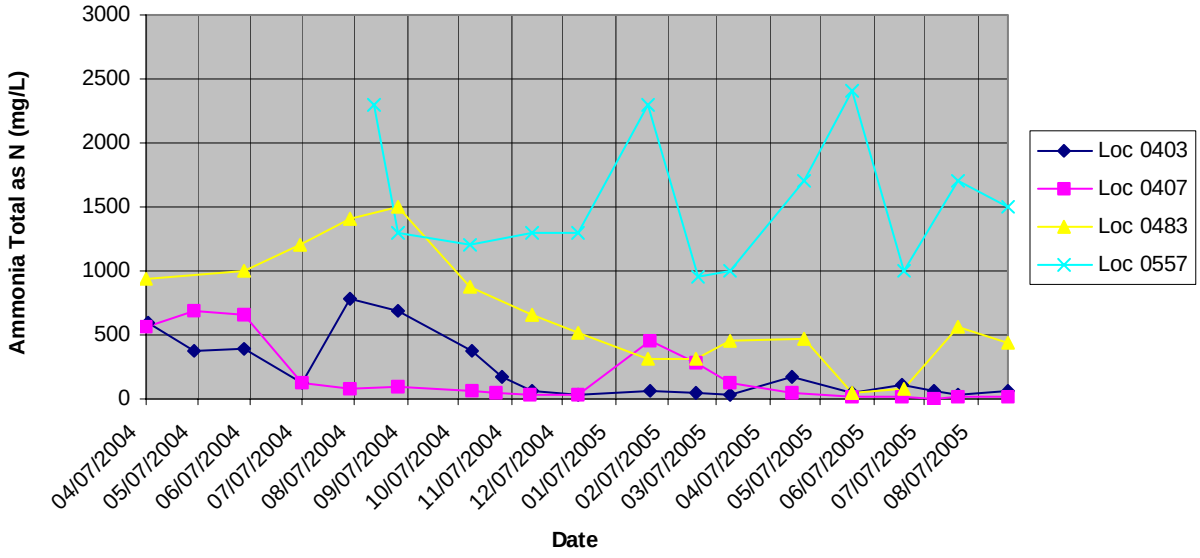
SAMPLE TYPES:

| | |
|---|---|
| E | EQUIPMENT BLANK |

# Time Versus Concentration Graphs

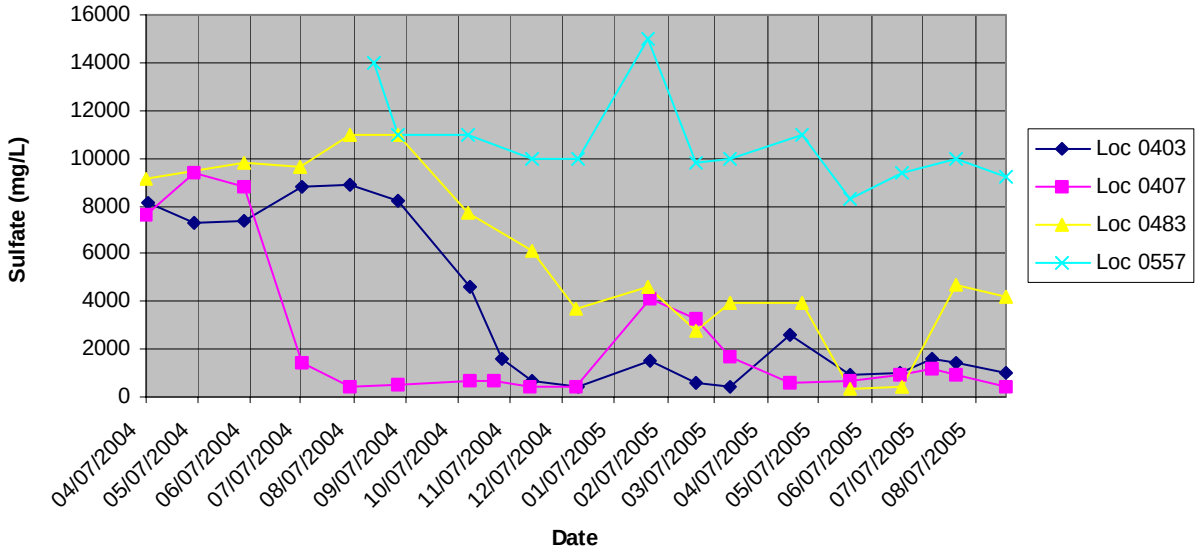
**Moab Site (MOA01)**

**Ammonia Total as N Concentration**



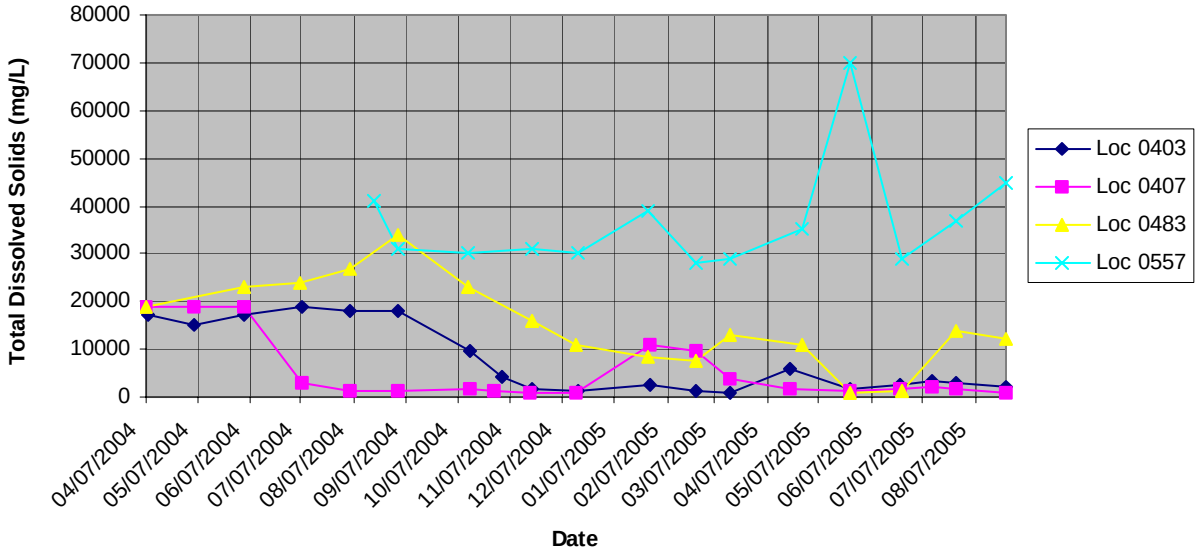

**Moab Site (MOA01)**

**Sulfate Concentration**



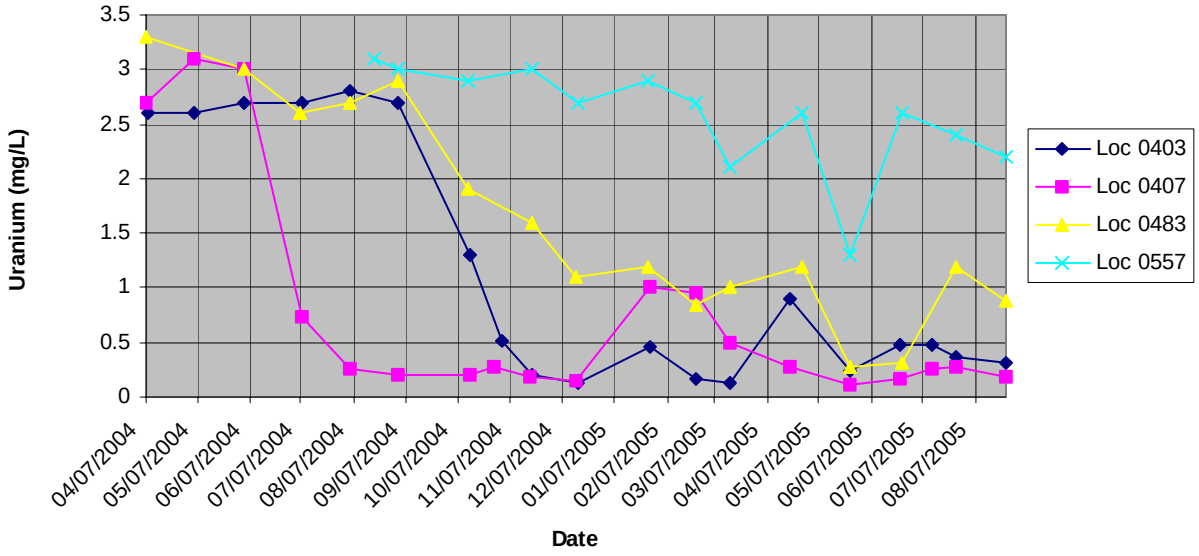
**Moab Site (MOA01)**

**Total Dissolved Solids Concentration**




**Moab Site (MOA01)**

**Uranium Concentration**



# Attachment 2

# Trip Report

Stoller

established 1959

DATE: September 7, 2005

TO: Ken Karp

FROM: K. G. Pill

SUBJECT: Trip Report

**Site:** Moab – Interim Action Configuration 1 Extraction Well Field Monthly Sampling – August 2005

**Date of Sampling Event:** August 23 through 26, 2005.

**Team Members:** Ken Pill and Nick Malczyk

**Number of Locations Sampled:** 11 extraction wells (0470 through 0479 and SMI–PW02), 6 observation wells (0403, 0407, 0483, 0557, 0559, and 0560), 4 piezometers (0562 through 0565), 2 surface water locations (0216 and 0245), and 2 treatment system locations (0547 and 0548). Including two duplicates and one equipment blank, a total of 28 samples were collected.

**Locations Not Sampled/Reason:** None.

**Field Variance:** Only a 125 ml sample was collected for uranium analysis as opposed to the standard 500 ml sample volume for metals. No other metals are being sampled, and this volume is sufficient for the uranium analysis. Limited sample volume was available for analysis from locations 0562, 0563, 0564, and 0565. These samples were split and preserved as directed by the laboratory for proper analysis.

**Quality Control Sample Cross Reference:** Following are the false identifications assigned to the quality control samples:

| False ID | True ID | Sample Type | Associated Matrix | Ticket Number |
|---|---|---|---|---|
| 2979 | 0407 | Duplicate | Ground Water | NDV-150 |
| 2980 | NA | Equipment Blank – GW Equip | DI Water | NDV-147 |
| 2981 | 0477 | Duplicate | Ground Water | NDV-180 |

**RIN Number Assigned:** All samples were assigned to RIN 05080221.

**Sample Shipment:** All samples were shipped in 1 cooler overnight FEDEX to Paragon Analytics, Inc. from Moab, Utah, on August 26, 2005 (Airbill No. 8527 5847 9064).

**Location Specific Information – Extraction Wells:** Extraction wells were sampled using dedicated submersible pumps. Water levels and pumping rates (gpm) for each extraction well prior to sampling are provided in the table below. With the construction of the new vaults, the measuring point for wells has been changed. All water levels listed in the table were measured from the new toc measuring points, which have not been surveyed in at this point.

| Well No. | Date | Time | Water Level (ft btoc)[a] | Pumping Rate (gpm) |
|---|---|---|---|---|
| 0470 | 8/25/05 | 9:10 | 13.10 | 3.44 |
| 0471 | 8/25/05 | 9:22 | 13.45 | 2.56 |
| 0472 | 8/25/05 | 9:32 | 13.16 | 1.99 |
| 0473 | 8/25/05 | 9:41 | 13.57 | 2.11 |
| 0474 | 8/25/05 | 9:56 | 12.94 | 0.63 |
| 0475 | 8/25/05 | 10:08 | 13.96 | 2.22 |
| 0476 | 8/25/05 | 10:28 | 13.58 | 1.94 |
| 0477 | 8/25/05 | 10:38 | 13.40 | 1.40 |
| 0478 | 8/25/05 | 10:53 | 14.72 | 2.93 |
| 0479 | 8/25/05 | 11:06 | 12.62 | 0.89 |
| SMI-PW02 | 8/25/05 | 07:18 | 16.38 | 22.06 |

Notes: a = All water levels measured from new toc measuring point

**Location Specific Information – Observation Wells:** All observation wells were sampled using micro-purge techniques with a peristaltic pump and dedicated downhole tubing. Sample depths and water levels for each observation well are listed below.

| Well No. | Date | Time | Depth to Water (ft btoc) | Sample Depth (ft bgs) |
|---|---|---|---|---|
| 0403 | 8/24/05 | 10:40 | 16.20 | 18 |
| 0407 | 8/24/05 | 16:15 | 16.95 | 17 |
| 0483 | 8/24/05 | 11:04 | 16.68 | 18 |
| 0557 | 8/24/05 | 11:23 | 15.97 | 40 |
| 0559 | 8/24/05 | 10:18 | 17.31 | 19 |
| 0560 | 8/24/05 | 09:16 | 16.02 | 31 |

bgs = below ground surface

**Location Specific Information – Piezometer Sampling:** This sampling event represents the first time the piezometers 0564 and 0565 were sampled since March 2005, and the first time since the 2005 Colorado spring runoff peak flows. Prior to sampling 0564 and 0565, it was necessary to develop the piezometers, which contained a significant amount of sediment. The table below presents the water levels, new stick up height, and depth to the river surface 24 hrs after the development was completed.

| PZ No. | Date | Time | Depth to Water (ft btoc) | Stick Up Height (ft) | Depth to River Surface (ft btoc) |
|---|---|---|---|---|---|
| 0562 | 8/24/05 | 13:23 | 3.62 | 3.29 | Dry at base |
| 0563 | 8/24/05 | 13:29 | 1.22 | 0.27 | Dry at base |
| 0564 | 8/25/05 | 14:25 | 3.60 | 3.36 | 3.34 |
| 0565 | 8/25/05 | 14:34 | 1.63 | 0.97 | Dry at base |

Approximately 175 mls was collected from 0562, 250 mls from 0563, 100 mls from 0564, and 350 mls form 0565. Due to the limited volume available for analysis, uranium was not analyzed for the sample collected from piezometer 0564.

**Location Specific Information – Surface Water Sampling:** The surface water sample for location 0216 was collected adjacent to piezometers 0562 and 0563 (photo attached). The sample was collected approximately 2 feet off the bank, from a depth of approximately 4 inches below the water surface.

The sample collected from location 0245 was collected approximately 7 feet off 0564, at a depth of 4 inches below the water surface.

**Location Specific Information – Treatment System Sampling:** Locations 0547 and 0548 were sampled when the evaporation pond level was ~5.9 ft. The sample for location 0548 was collected from the original sampling port.

**Well Inspection Summary:** A well inspection was not conducted.

**Equipment:** No issues to report.

**Site Issues:** According to the USGS Cisco Gaging Station (Station No. 09180500), the mean daily Colorado River Flows during the time period of this sampling event were:

| Date | Daily Mean Flow (cfs) |
|---|---|
| 08/23/2005 | 3,570 |
| 08/24/2005 | 3,440 |
| 08/25/2005 | 3,510 |
| 08/26/2005 | 3,540 |
| 08/27/2005 | 3,500 |

**Corrective Action Required/Taken:** None.

(KGP/lcg)

cc: J. D. Berwick, DOE-EM (e)
D. R. Metzler, DOE-EM
C. I. Bahrke, Stoller (e)
L. E. Cummins, Stoller (e)
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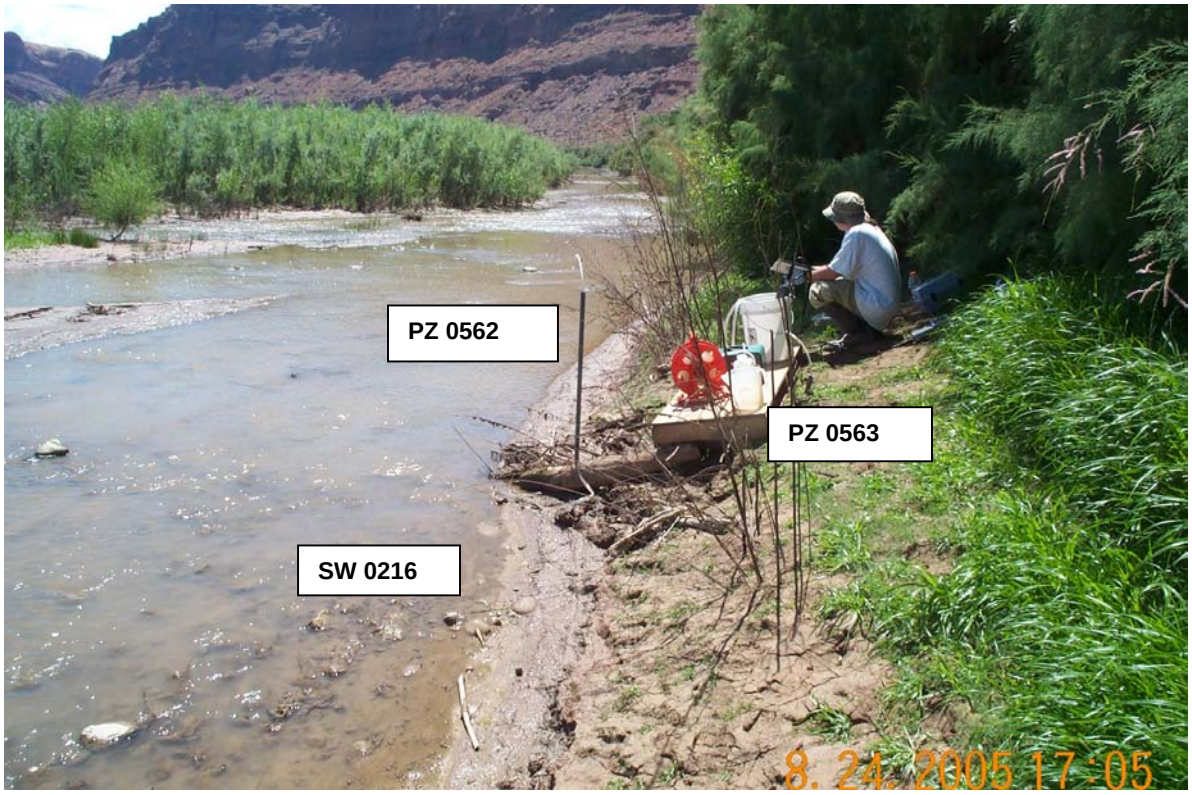
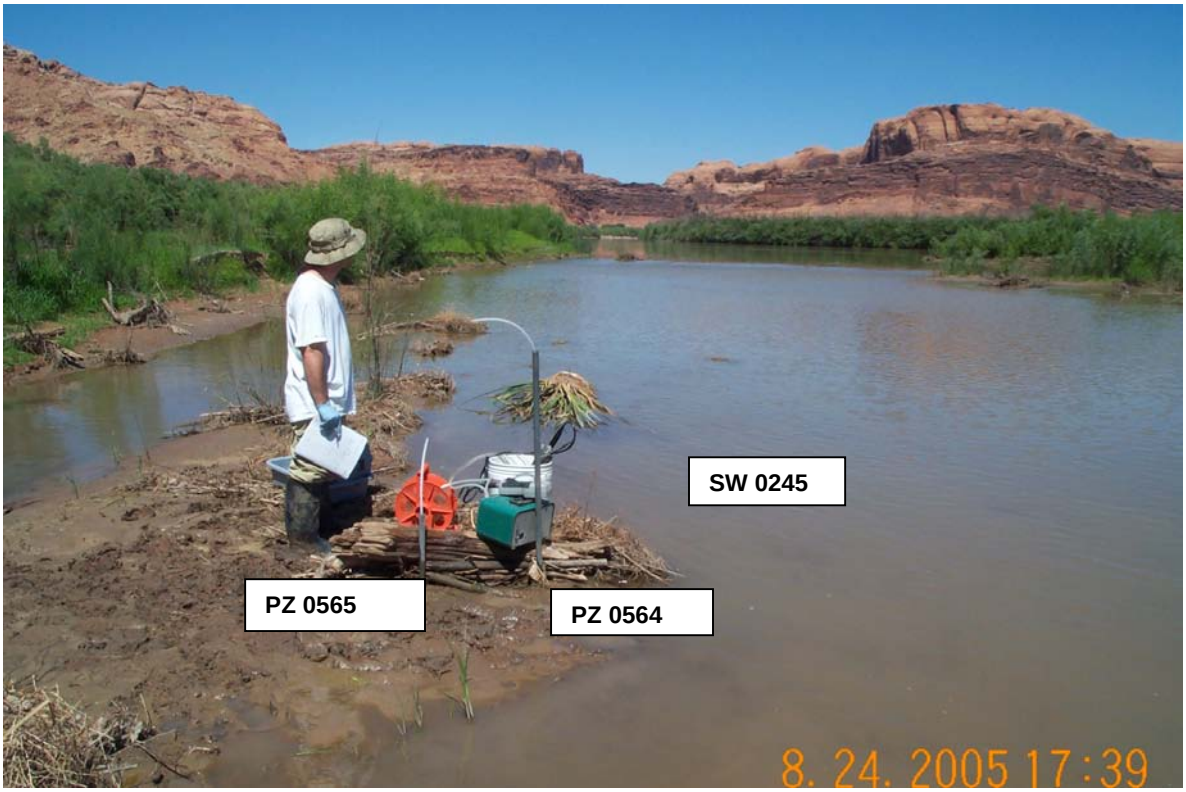
L. M. Edwards, Stoller (e)
S. D. Lyon, Stoller (e)
K. E. Miller, Stoller
K. G. Pill, Stoller (e)
J. E. Price, Stoller (e)




Surface Location 0216, Piezometers 0562 and 0563




Piezometers 0564 and 0565 and Surface Location 0245